



EGUsphere, referee comment RC1
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Comment on egusphere-2022-346

Anonymous Referee #1

Referee comment on "Optimizing radar scan strategies for tracking isolated deep convection using observing system simulation experiments" by Mariko Oue et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-346-RC1>, 2022

The preprint by Oue et al focuses on the choice of radar scanning strategies for campaigns aiming at investigating convection processes. The study is conducted using an Observing System Simulation Experiment referred to a 4-hours event. RHI sweeps are recommended to complement observation provided by a surveillance weather radar using a NEXRAD 5-minute volumetric scanning strategy. This recommendation is not new. Based on experience and known limitations of volume scanning (lack of time resolution, blind cone), many campaigns have adopted additional research radars performing RHI scanning (eg. those cited in the manuscript, but also others, like LPVEX or IFLOODS) to track instrumented aircrafts, to analyze precipitating structure, or to obtain high resolution measurements along privileged direction, such that along instrumented sites. The step ahead is however the use of a high-resolution simulator and a forward radar operator to quantify the advantage of RHI, depending also on the geometry of observations (eg the distance between radar and a convective cell).

It is not clear to me, if, having at disposal one or two research radars, how the sector where RHI sweeps are performed, is identified. Typically, to this purpose, data from volume scans of an operational radar are used by an operator and likely optimal sector is subject to varying in time. Are tools like tobac helpful for an operator? Is it possible to switch to an unsupervised scanning? I think highlighting these points will improve the significance of the manuscript.

Specific comments.

L 54. Past experiences with PAWR should be better cited.

L 81. Spatial resolution of CR-SIM is not mentioned.

L 94. Although described in a different paper, could authors explain which radar measurement errors are included in the simulator?

L 258. "Large rain">Large raindrops

L 382. Please explain IOP

L 464. The data availability statement should be more specific about accessing data used by the authors

L 606. Is not clear if tobac identifies splitting and merging and how they are considered in Fig. 2

L 627. It is not clear why the peak of Zdr (around 22) is not reflected in any features of Kdp